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SOURCE Sovkhoznyaya Gazeta.

MEASURES FOR PREVENTION OF BRUCELLOSIS IN USSR

[Comment: The following is the full text of an article in Sovkhoznyaya Gazeta on measures for the prevention of brucellosis recommended by the Institute of Sanitary Education, Ministry of Public Health USSR.]

Brucellosis: A Contagious Disease

Sheep, goats, swine, cattle, horses, donkeys, camels, and buffaloes are susceptible to brucellosis.

On farms where cattle are infected with brucellosis, the disease may also be found among dogs, cats, wild rodents, and fowl, and it may be transmitted to humans who come in contact with infected animals, with milk, or with other animal products. Infected sheep and goats are particularly dangerous to man.

Although brucellosis in humans and animals has been known for a long time, measures against it were undertaken only when the Soviets came into power.

Brucellosis is caused by a species of Brucella bacteria, which are strongly resistant to external factors and retain their viability for a long time. These bacteria can survive for 2 months in manure, contaminated discharges of diseased animals, soil, and dust, and also remain viable for a long time in fresh milk, sour milk, and butter made from untreated milk of brucellar animals.

Fresh brynza [a type of cheese made in the Caucasus southern USSR, and the Balkans] made from raw milk of brucellar sheep is especially dangerous, since brucellae may survive in such cheese for a period of 2 months. It is advisable, therefore, to age brynza for at least 2 months before offering it for human consumption.

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Since brucellae also can remain viable for a long time in slaughtered animals, meat [from suspected animals] must be either salted down or thoroughly cooked. When carved into small pieces and thoroughly boiled, it may be safely eaten. No Brucella bacteria remain alive after 2 months in the salted mutton of brucellar sheep.

Strict personal prophylaxis must be observed by all persons employed in handling sheepskins and hides.

Brucellae remain alive in the hides of infected sheep for one month after they have been salted down and for 2 months in [cured] sheepskins.

Symptoms of Brucellosis in AnimalsBrucellosis in Sheep and Goats

Brucellosis in goats, sheep, cows, swine, and other animals often exists in a latent form. Such animals may infect humans and other healthy animals. Brucellosis takes the most severe form in humans when the disease has been transmitted to them by sheep or goats.

The chief manifestation of brucellosis in sheep is abortion. The abortion rate reaches 30-40% in herds infected for the first time. Sheep ordinarily abort in the 3d or 4th month of pregnancy. The newborn lambs of sick ewes often are unable to survive. Sterility also is noted, especially among sheep that have aborted before. It is sometimes possible to recognize brucellosis in sheep a few days before they abort. About 2-3 days (in rare instances, 6-8 days) before they abort, sheep become languid, lie down, frequently lose their appetite, but drink large quantities of water. There are also mucous uterine discharges and hemorrhages. At the same time the temperature of the animals rises and they abort soon thereafter. Frequently, the placenta is not expelled after abortion.

Brucellosis symptoms are especially pronounced after abortion. Temperature remains high for a short time; in most sheep, joints become inflamed, swollen, and painful. The animals become lame during this period, sometimes permanently. Paralysis, more often of the rear extremities, also occurs. In such cases, the animals are completely unable to walk. The udders of brucellar animals quite often become affected.

Brucellar goats not only abort, or produce kids which are unable to survive, but they also lose a great deal of weight and their milk yield diminishes. They rarely abort during the second pregnancy. Various complications may occur: abnormal discharges from the genital organs lasting 30-40 days, prolonged lameness, inflammation of the udder, and affection of the eyes.

Brucellosis in Cattle

As a rule, brucellosis takes a comparatively mild course in humans when contracted from cattle. However, if the cattle have acquired the disease through contact with brucellar sheep or goats, it is extremely dangerous to humans.

Brucellosis sometimes exists in cattle as a latent infectious disease. The most common symptoms are abortion, miscarriage, and sometimes the birth of a weak calf which soon dies. Abortion usually occurs in the 5th to 7th month of pregnancy. Retention of placenta after calving may be another symptom, and there may be inflammation of the uterus accompanied by an unpleasant-smelling muddy brown or reddish discharge from the uterus. A large number of Brucella bacteria are discharged at this time. Such cows are dangerous to other animals and must be immediately removed and isolated.

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Among other symptoms are swelling and reddening of the external genital organs and inflammation of the udder. Usually, all these symptoms appear a few days before the animal aborts. Edema of the front and rear extremities is also observed.

Abortion is not necessarily a sign of brucellosis. Moreover, infected gravid cows often do not abort. There may be other causes than brucellosis for abortion. Only veterinary specialists can accurately diagnose the disease. It is therefore advisable to seek the advice of a veterinarian or a fel'dsher when any of the above symptoms appear.

Brucellosis in Swine

Abortion is also a typical symptom of brucellosis in swine; it occurs 2-3 months after impregnation. As much as 50% of impregnated swine may abort on some farms. Miscarriage is sometimes preceded by diarrhea, poor appetite, and edema of the udder. As a rule, miscarriages do not recur in subsequent pregnancies, even though the animals remain infected with brucellosis.

Such swine sometimes have difficulty walking. Their hindquarters are paralyzed and there is a purulent inflammation of the joints, and, in the boars, inflammation of the testicles.

In a majority of sows the disease takes a severe course, lasting 2-3 weeks. Conditions then rapidly improve and it becomes difficult to recognize the disease by outward appearance. However, a special examination can determine the diagnosis.

Veterinarians alone can accurately diagnose the disease. It is very important that the aborting animal's blood be examined. The offspring also must be examined.

Measures to Prevent the Spread of Brucellosis Among Animals

Brucellosis may spread throughout an entire susceptible herd. Infected animals must be kept separated from the healthy ones. Healthy and infected animals must not be permitted to use common pasturelands, watering places, etc.

Animals must be examined before they are included in healthy herds. When buying cattle one should ask for a "veterinary certificate." This certificate must state that the animal was taken from a place which was free from infectious disease and that the examination of the animals for brucellosis was negative. Such an examination must have been made not more than one month before the date of the sale.

Each newly acquired animal must undergo quarantine. The duration of the quarantine is determined by the veterinary worker, and the animal must not be permitted to use the common pastureland until permission is granted by the veterinary worker. During the time the animal is under quarantine, it must be examined for brucellosis.

All symptoms of brucellosis, particularly cases of abortion, must be reported to a veterinarian or a fel'dsher. Until a diagnosis has been made, all measures must be taken to prevent infection of humans and healthy animals with brucellosis. Therefore, in all cases of abortion or premature birth it is necessary that the animal be isolated.

The spot where an animal has aborted must be disinfected. The aborted offspring should be placed in a sturdy box and dispatched to the laboratory for an examination. The placenta, straw, manure, and contaminated discharges of the animal must be collected with a pitchfork or shovel and either burned or buried in the cattle burial grounds or in a hole about 6 feet deep so that dogs can not dig it up.

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Two photographs and a chart accompany the article (source available in CIA). The photographs show precautionary measures to be taken in the removal and burial of aborted offspring. The chart shows animals which are susceptible to brucellosis (a goat, a sheep, a camel, a pig, a cow, and a horse) and which are the principal sources of infection for humans. In the chart, animals circled with heavy lines (the goat and the sheep) indicate those which produce most severe cases of brucellosis in humans.

It is not advisable to handle with bare hands the fetus or articles which have been contaminated by the animal discharges. A 20% solution of chlorinated lime or fresh slaked lime must be poured liberally over the spot where the fetus was aborted and over the box, shovel, and pitchfork.

All animals must be systematically examined for brucellosis and infected animals immediately isolated. Each time a brucellar animal is discovered, the rest of the herd must be transferred to another pasture and another watering place.

To eradicate brucellosis completely on a farm, people must carefully observe rules of personal prophylaxis in tending animals and in handling raw animal products. Raw milk must not be used as food.

When brucellar animals are discovered, they must be detached immediately from the herd and formed into a separate group. The buildings formerly occupied by them must be disinfected. The disinfectant consists of a 20% solution of chlorinated lime, 3-5% solution of lysol or creolin, or fresh slaked lime. The stalls formerly occupied by the brucellar animals must be sprayed with a disinfectant solution and the manure removed from them. This should be followed by another disinfection.

Manure must be stacked up and disinfected by submitting it to heat created by internal biological processes and should not be used as soil fertilizer for at least 2 months. In preparing fuel bricks from sheep manure, strict precautions must be taken. The workers who cut and stack the fuel bricks must wear high-top shoes that are in good condition, overalls, and durable gauntlet-type gloves.

Brucellar animals may give birth to healthy offspring. Isolation and raising of the young animals must be under supervision of a veterinarian or a feldsher.

Rules for Raising Healthy Young Animals

It is obligatory for a farm where brucellosis has been discovered to maintain a place of confinement and a dispensary. Pregnant cows must be transferred to the confined area one month before calving. Immediately before delivery, the area around the external genital organs of the cows must be washed with either lysol or a potassium permanganate solution and the hind legs and tail cleaned of manure. The newborn calves must be placed first in a dispensary, where for a period of 10 days they are fed colostrum from the mothers. After this period, the calves are transferred to an isolated stall, where they are fed milk from healthy milch cows. If there are not enough healthy cows, the calves are fed pasteurized milk from the cows infected with brucellosis.

The calf stalls must have their own service personnel and separate supplies. A mat saturated with a disinfectant must be placed at the entrance to the stall, and shoes must be wiped before entering or leaving.

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At the end of the milk-feeding period, the 3- to 6-month-old calves must be moved to special pastureland; during the winter months they must be kept in special buildings which are isolated from farms where incidence of brucellosis has been discovered. These buildings must be well lighted, dry, and roomy. Calves which are 5-6 months old must be examined for brucellosis twice. The infected calves must be segregated from the healthy ones.

How Brucellosis Is Contracted by Humans

Strict precautionary measures must be observed to prevent brucellosis in human beings.

Brucellar animals are particularly unsafe at the time when they abort: Bacilli in large quantities are discharged with the fetus, placenta, and hemorrhages from the uterus. The manger, bedding, fodder remnants, soil, and the wool of the animal itself become contaminated.

Not only do brucellar animals spread the disease when they abort, but they may also discharge *Brucella* bacilli for several days before that in hemorrhages from the uterus. Sheep, cows, and swine which give birth to their offspring within a normal period of time may also be a source of infection to humans; they discharge *Brucella* bacilli with milk, urine, and feces.

Brucella bacilli may enter the human organism through the mucous membranes of the mouth, nose, or eye. A person may be infected by eating food contaminated with *Brucella* bacilli. Individuals who take care of infected animals can easily transfer the *Brucella* bacilli to the mucous membranes of their eyes, noses, or lips by means of dirty hands.

An apparently healthy skin may have a multitude of small fissures through which *Brucella* bacilli may enter, and we may assume that *Brucella* bacilli can penetrate into the human organism through any abrasions or scratches on the skin.

A person may become infected through the skin while assisting in delivery when the animal aborts. The following types of personnel are commonly exposed to brucellosis and may contract the disease if sanitary conditions are not observed: workers in slaughterhouses and slaughtergrounds, personnel who dress carcasses of infected animals, milkmaids who milk brucellar animals, and workers who handle the wool of infected animals with bare hands.

Humans may contract brucellosis after eating milk and food products manufactured from the flesh of infected animals. Unboiled goat's milk and fresh brynza, prepared from unboiled sheep's milk, are most dangerous of all. Raw milk from animals which have not been examined may infect all workers who make brynza or handle other dairy products.

Food products from infected animals may produce brucellosis in individuals other than those who come in contact with the animals. Strict sanitary supervision of food products must be maintained. Milk must be heated to 70° C for a period of 30 minutes (pasteurized) or boiled. Milk products must be prepared only from pasteurized milk. Meat must be boiled, fried, or roasted thoroughly. If these precautionary measures are observed, brucellae can be destroyed and food products rendered safe for human consumption.

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CONFIDENTIALSymptoms of Brucellosis in Humans

The period of incubation is 2-3 weeks and sometimes longer. The disease may manifest itself in various ways, often resembling other diseases such as malaria, grippe, rheumatism, typhoid fever, tuberculosis, and others. The initial stages of the disease in humans is characterized by rising temperatures and violent fever in the evening. During the morning hours the temperature usually goes down to normal. The patient perspires profusely at night and sometimes suffers from insomnia. Later, the joints of arms and legs may become very painful; the joints swell and the patient becomes bedfast. The bones, muscles, and joints may be so severely affected that the patient cannot move. The disease lasts anywhere from 1-2 or 3-4 months, but may persist for a considerably longer period.

Resemblance of brucellosis to other diseases makes it difficult to diagnose this disease. Special laboratory studies must therefore be made by health officers.

Brucellosis is curable, but, to recover completely, it is sometimes necessary for the patient to undergo a period of long and persistent treatment. It is better, therefore, to protect oneself against infection.

Precautions in Taking Care of Infected Animals

When taking care of infected animals it is necessary to observe strict cleanliness and precautionary measures to avoid infection.

By following the instructions given below every cattle breeder can guard himself from infection.

Smoking and eating should be avoided in buildings where brucellar cattle are housed. A supply of boiled drinking water must always be on hand.

Special clothing and special footwear must be worn by all those who take care of infected cattle, as well as by those working in slaughterhouses, wool-washing works, shearing sheds, and establishments where raw animal products are handled. Nothing should be worn over the special clothing and footwear. At the end of the workday, the special clothing and special footwear must be removed and left in the building where the work was performed.

Workers must not enter homes while wearing the same clothing and footwear which they wore while working with brucellar animals. The clothing may contain *Brucella bacilli* which may contaminate the whole family.

Immediately after work, all workers must rinse their hands in an antiseptic solution and then wash their hands with soap and water. This antiseptic may be a 3% solution of lysol or creolin or a weak solution of potassium permanganate. Antiseptic solutions, wash basins, soap, and towels must be available in every shop.

Particular care must be taken by those who assist in abortion, lambing, calving, foaling, or farrowing.

Those who take care of sick animals must keep their fingernails short and must be certain that there are no scratches or cuts on their hands.

Rubber gloves must be worn by those assisting during delivery and also during the postnatal period, as well as by those who handle young animals. Neither the infected animals nor their offspring must be admitted to homes.

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Another method of preventing infection is vaccination of all those who come in contact with brucellar goats or sheep. Vaccination is tolerated well by human beings.

Cattle breeders must be familiar with all health regulations affecting personnel who come in contact with infected animals; they must also be familiar with preventive and sanitary procedures on farms and with methods of raising young animals.

In the USSR, a multitude of measures exist for the control of brucellosis.

If the veterinary specialists and medical workers combine their efforts to help all segments of the population, especially cattle breeders, in kolkhozes and in sovkhozes, brucellosis ultimately will be eradicated.

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